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ENERGY ACTION AGENDA FOR THE 1990's

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Energy and Society

Energy is force; it is heat, power, light and locomotion. The harnessing of energy has defined the stages of history and the progress of society.

Today, America has attained a culture which is energy-dependent. We have stretched domestic energy resources and grown reliant on foreign sources to sustain our standard of living.

Here in Massachusetts we survive and thrive using large amounts of energy in industry, offices and homes; relying almost totally on energy fuels imported from other regions and abroad. Today, as has been true for decades, energy is costly both because of the need to transport energy fuels long distances and the severe climate conditions of New England.

Energy Policy for the 1990's

As we approach the 1990's, the purpose of state energy policy should be clear. Simply put, the Blueprint 2000 recommends: state government, acting with the energy industry, must ensure Massachusetts citizens and businesses have available an adequate, reliable supply of energy at least cost and greatest compatability with the environment.

The Commonwealth's energy policy has been evolving for decades, ever since the passage of the statutes establishing the Department of Public Utilities. Public reviews of supply forecasts and the environmental effects of energy projects were added to cost and pricing reviews with the creation of the Energy Facilities Siting Council and the establishment of the environmental impact process in the mid-1970's.

In the 1980's people in Massachusetts and throughout America became acutely aware of the large scale environmental problems in our society--global warming, acid rain, ozone layer depletion. People know that energy fuel consumption is a major cause of air pollution--smokestack emissions from oil and coal burning power plants; exhaust pipe emissions from autos; chimney emissions from oil and gas burners in homes and industrial facilities.

Hence, Blueprint 2000 recommends a state energy policy for the 1990's that places high priority on environmental protections. The time has come to pursue both least cost pricing and least environmental harm as dual and equal goals.

In the mid 1970's, our state accepted as policy that a healthy environment and a healthy economy were compatible, complementary goals. In fact, we could not have one without the other.

The Blueprint 2000 deliberations point to a new sense of priorities for the 1990's: the pursuit of energy supplies sensitive to costs and the environment should be pursued as compatible, complementary goals.

Blueprint 2000 also recommends joint responsibility for achieving energy goals-- state government and the energy industry working together.

To be sure, utility companies as competitive monopolies will always be responsible for protecting the interests of their shareholders, while at the same time being subject to strict regulatory scrutiny. But, in another sense, utility companies can further society's interests in acheiving economic, environmental and social goals. Collaboration between state government, energy providers and energy users can advance the common good-- adequate, reliable energy at minimal cost and harm to the environment.

Finally, Blueprint 2000 recommends that state policy in the 21st century advance forms of energy more in harmony with nature. Solar, hydro, wind power and energy efficient technologies could be more abundant energy resources with deliberate govermental support in the 1990's.

Energy Needs by the Year 2000

Estimates of future electric energy needs in Massachusetts and New England are essentially confirmations of past trends and intelligent assumptions about the future. So, it is necessary to review recent energy growth patterns to place the region's future needs in perspective.

From 1965 until 1972, peak load growth in New England was 7.6% annually. The 1973 oil embargo, subsequent recession and higher prices led to serious conservation and dramatically reduced growth in peak demand. Because of this, from 1974 to 1986, peak load growth was below 3% per year. With the return of less expensive oil and the expansion of the state's economy, peak load growth from 1981 to 1989 has been close to 4.5%.

Additions to the electric generating capacity roughly tracked these patterns, increasing 8.3% per year from 1965 to 1975; and .5% per year for the ensuing decade.

Currently, New England has electric generating capacity of approximately 23400 MW, not including Seabrook (1150 MW) or Pilgrim (670 MW); of that, Massachusetts has 10308 MW. Approximately 20% reserve is necessary to ensure a reliable supply of electricity.

Turning to the future, state officials project overall economic growth through 1997 at 2.6% per year in real terms. In 1986, the New England Governors Conference adopted a 2.2% estimate of growth in energy demand until 2000 for planning purposes, which is also the figure that the New England Power Pool uses in projecting future electricity needs.

How do these projections translate into additional capacity needed on the New England electricity grid to meet demand? Projections differ, ranging from a low of 1250 MW to a high of 4800 MW. The low number is the best case scenario that the Executive Office of Energy Resources projects in its State Annual Forecast of Energy Resources (SAFER), published in December 1987. In the same report, the Executive Office estimates the maximum amount of additional generating capacity would be approximately 4000 MW. The estimate of 4800 MW is from the New England Power Pool (NEPOOL) 1989 Capacity, Electricity, Loads and Transmission (CELT) Report. The well-respected Federal Reserve Bank study, completed in 1987, projects electricity deficits in the years beyond 1995, but hesitates to quantify those deficits.

The major difference in these numbers arises from the uncertainty of the effect of demand side management and other efficiency programs, many of which are still in the planning stages. These programs can result in impressive electricity

usage savings. For instance, a report prepared for the Board of Directors of Boston Edison states that a realistic goal for the year 2000 would be 1000 MW saved by that company alone.

In summary, for the summer of the year 2000, NEPOOL estimates a peak demand of 25340 MW and a total generating capacity of 26132 MW. Allowing for 22% reserve, lacking aggressive efficiency programs, the generating capacity of the region will have to be augmented by 4783 MW, or approximately 2100 MW in Massachusetts. However, NEPOOL also estimates that there are contingency resources available in the year 2000 in the amount of 9422 MW, which result in a 3600 MW surplus, even without Seabrook.

An Adequate Supply Through Efficiency

Energy efficiency in the 1990's holds the key to minimizing environmental harm, minimizing costs, and providing the needed additional capacity.

Efficiency encompasses more than conservation, although that is certainly an aspect of it. Energy efficiency is how well we use the energy available as well as how little of our energy resources (oil, coal, gas) we use.

There is no consensus on how much electricity could be

saved through comprehensive, aggressive energy efficiency programs. In its study of energy efficiency, Power to Spare, published in July 1987, the New England Energy Policy Council estimates that the region could require 35 - 57% less electricity than currently projected by NEPOOL: "...at full efficiency, New England could be using less electricity and generating capacity [in the year 2005] than it is using today even with the level and pace of growth predicted by the region's utilities."

Utility companies and other energy analysts express more caution in estimating possible savings through efficiency measures. Only recently have public utility commissions been willing to treat invvestments in efficiency as an investment in power production, thereby allowing utilities a return on such investments. Cost-recovery for utilities is now structured in the region to treat efficiency expenditures like other types of energy supplies.

There is agreement, however, that efficiency is environmentally sound, and can be effected faster and usually cheaper than construction new power plants. Hence the Blueprint 2000 recommendations feature energy efficiency as the centerpiece for state policy in the 1990's.

A Reliable Supply through Diversification

To maintain a reliable supply of energy is an important and complicated element of ensuring an adequate supply.

NEPOOL and the Northeast Power Coordinating Council have a measure for reliable electric generating capacity: "that the probability of disconnecting non-interruptible customers due to generation deficiency, on an average, will be no more than once in ten years." In other words, the average customer should expect to lose electricity due to capacity shortage only once in a decade.

There is no commonly accepted standard for the mix of energy fuels that would be deemed appropriate as a standard for providing a reliable supply of electricity. Currently, according to NEPPOOL, New England gets 40.8% of its electric energy from oil, 25.7% from nuclear, 14.5% from coal, 9.1% from purchases outside the region, 7 % from hydro, and 2.9% from natural gas.

Because Massachusetts depends upon imports for its primary energy supply, it is crucial that the state not be overly dependent on any one source. Oil still supplies most of the energy in Massachusetts -- approximately 57% -- and will likely continue to do so beyond the year 2000. (Table 1)

Table 1.

TOTAL PRIMARY ENERGY CONSUMPTION IN MASSACHUSETTS
Massachusetts Executive Office of Energy Resources
SAFER
(BTU's)

	1976	1986	1997
OIL	73%	57%	52.2%
NATURAL GAS	10	15	22.3
COAL	-0-	10	11.0
NUCLEAR	6.4	5.6*	9.2**
RENEWABLES***	2.1	3.2	5.2

note: primary energy is that energy which is derived from the consumption of such fuels as oil, coal, gas. Electricity is termed secondary energy because it is the product of that combustion.

* Pilgrim (670 MW) out of service
** Millstone III (1140 MW, completed in 1986) operational
Seabrook not included
*** eg., hydro, wind, solar

Since the OPEC oil embargoes of the 1970's, Massachusetts' utilities have moved aggressively to convert oil-fired plants to coal burning. Three units at both Brayton Point and Salem Harbor, almost 1500 MW, have been converted from oil to coal since 1980. In Massachusetts, the significant conversions were the 148 MW Mt. Tom plant owned by Northeast Utilities in 1982, and the two Eastern Utilities Association Somerset Station units totalling 186 MW.

Environmental concerns have complicated decisions about conversion since coal, although the more abundant and inexpensive fuel, emits far more sulfur dioxide (associated with acid rain), carbon dioxide (the greenhouse effect) and

nitrous oxides (smog) than gas, even with the best available control technology.

Clearly adding natural gas will increase our diversification and reduce environmental damage. The constraining factor to adding natural gas is pipeline capacity.

Currently there are two major gas pipeline proposals being considered in the FERC Open Season which, if permitted, will be delivering gas to Massachusetts by 1992. Both of these would bring gas from western Canada, while other, more minor projects, would provide new pipeline capacity for natural gas from the Southwest. The Canadian lines would increase our dependence on a single foreign energy supplier, since Canada now supplies the region with nuclear power from Pt. Lepreau in New Brunswick and electricity from Hydro Quebec, Phase I. The completion of Phase II of Hydro Quebec in 1991, which provides a firm contract of 1310 MW per annum, will increase our dependence on energy imported from a single nation -- with Canada directly providing approximately 10% of New England's energy needs in the early 1990's. However, with the recent adoption of the Free Trade Agreement, Canada, a stable, friendly neighbor and trade partner, will likely remain a supplier of much of the region's energy well beyond the year 2000.

To address the problem of insufficient natural gas pipeline capacity for optimum diversity in energy supplies, the Blueprint 2000 Committee recommends that capacity be increased by 500 million cubic feet per day by January of 1992 and, if necessary, by another 300 million cubic feet per day by January of 1995. To accomplish this, the Commonwealth must make the completion of the proposed pipelines, with regard for environmental and social protections, a priority of its federal/state policy.

Table 1 indicates natural gas currently supplies approximately 15% of all energy used in Massachusetts. The current goal of the Commonwealth is to see that percentage increase to 22% by 1995, which would match the 1989 national average.

Another factor in securing a reliable supply of electricity energy is decreasing the reliance on large power plants, although there are several plants planned which are over 200 MW. This trend has been encouraged by the 1978 federal Public Utility Regulatory Policies Act (PURPA), which requires utilities to purchase excess power from small power producers and cogenerators, known as "qualifying facilities," at the utility's avoided cost. The result has been the entrance of cogenerators and others into the power-generation business. Most of the facilities are small-power, and many are dual-fired, with the expectation that the supply of natural gas

will be sufficient to convert to gas-combustion within the decade. Advantages to smaller power plants include shorter lead times for building, more dispersed siting and potentially fewer environmental problems, lower construction costs, and a less serious adverse effect to the grid if any one plant goes down. NEPOOL estimates that by the year 2000, an additional 1960 MW of non-utility generated power will be added to the grid, with the major increase starting in 1993, as independent power producers now in the planning stage begin to come on line.

Blueprint Committee Recommendations

I. ENCOURAGE INVESTMENTS IN ENERGY EFFICIENCY BY BOTH THE PRIVATE AND PUBLIC SECTORS.

RECOMMENDATION ONE:

The Commonwealth should establish a comprehensive program to increase energy efficiency investments in all sectors. This program should be fair, administratively feasible, efficient and consistent.

In developing an energy efficiency program, it is important to delineate its purposes. There are several reasons to emphasize energy efficiency investments: First, in many instances such investments will result in lower energy bills. Second, in most instances, energy efficiency affects fewer environmental resources, and is more environmentally benign than most supply options. Third, investments in efficient use of energy creates more jobs and other economic benefits than enhancing supplies. Fourth, reductions in energy consumption -- especially oil consumption -- ensure that the Commonwealth is less vulnerable to future energy disruptions.

There are four essential elements that should be considered in an energy efficiency program. First, the program must be cost effective. If an energy efficiency investment is not economically competitive with other options, it should not be

pursued. Assessments of these investments must include not only the capital costs, but also the marketing, installation, maintenance, and environmental costs.

Second, the responsibility for implementing various elements of the program should be given to those institutions best equipped and motivated to aggressively pursue them. Ideally, the program would be a mixture of activities by both the private and public sectors and result in lifestyle choices and investments that lead to the efficient use of all energy sources --oil, natural gas, electricity, and gasoline. Because oil suppliers are not regulated, it is tempting for government to mandate conservation programs in the electricity and gas sectors, which have been historically regulated, while de-emphasizing energy efficiency improvements in the oil sector. Such policies may result in providing the wrong price signals to consumers by increasing the cost of using electricity and gas and not oil -- the energy source that is most likely to be disrupted.

Third, the program must be fair. For example, to ask residential electric ratepayers to transfer large sums of money to large commercial and industrial users so that they can make investments that were already in their economic self interest, is potentially regressive.

Fourth, the program should be permanent. Too often government conservation programs are held hostage to the whims of an individual administration, and therefore lack stability and continuity.

There are several elements that, if adopted, would enhance the Commonwealth's existing array of energy efficiency programs. These are presented in this report as options for consideration.

* **The Commonwealth should review its present programs and policies aimed at encouraging "energy efficiency" and "demand management" investments by electric and gas utility companies to ensure that both the utilities and their existing ratepayers are rewarded, not penalized, for prudent investments.**

While the electric and gas utilities should not be held responsible for carrying the burden of all energy efficiency investment opportunities, there are significant investments that could be in the long-term self interest of the electric and gas ratepayers. Possible programs such as those listed below should be tested, and the effective ones pursued. The Department of Public Utilities should be encouraged to provide the utilities with a regulatory framework which ensures that a utility's least-cost plan, including environmental and social costs, is the utility's most profitable plan.

Aspects of such a framework could include: allowing utilities in one franchise area to make demand-side investments in another, and transfer those savings into their franchise area; establishing auction or bidding schemes for energy

efficiency improvements; and finally, establishing programs in which utilities (and their ratepayers) could engage in negotiations with large users to share the savings from new energy efficiency investments. Other aspects of the framework may need to be reformed to ensure that a utility has genuine incentives favoring aggressive pursuit of cost-effective energy efficiency.

It is important, though, that these programs not treat the ratepayer as a source of generic revenue for energy programs. Rather, the programs should provide the consumer with measurable economic benefits.

***Maintain and enforce stringent energy efficient building codes.**

The Commonwealth is in the process of strengthening its energy efficiency building codes. Yet, without strong enforcement, these codes will not be as effective a mechanism for reducing energy consumption as is societally optimal. Local building inspectors remain hampered by limited resources.

While the Energy Committee realizes that it is unlikely that the legislature will pour massive amounts of money into expanding the enforcement capabilities of local inspectors, we believe that the status quo is equally unacceptable. Therefore, we propose that the state consider two additional

actions. First, a working group should be established consisting of the Secretaries of Energy Resources, Communities and Development, and Administration and Finance; three elected local officials selected by the Governor; and four individuals selected by the legislature. The purpose of the working group would be to develop options for improving energy efficiency code enforcement, and review progress on a quarterly basis.

Second, the Governor should file legislation to provide the state with the authority to review the energy efficiency of new large developments. Such a review process could be patterned after the environmental impact statement process, or could mirror the proposed building performance standard reviews, except the review would be conducted by the state rather than local officials who often do not possess the resources to undertake such reviews.

- **Establish an Energy Efficiency Labeling Program for residential and commercial buildings.**

At the time of sale of a building, an energy audit would be performed. This audit would include a system which would rate each building on a scale of 1 to 7, with "7" being super energy efficient and "1" being a veritable sieve. The audit would become a standard procedure at the point of sale.

The more efficient the building, the lower the cost of climate control, so the prospective owners of high rated houses

would be able to realize substantial savings in annual energy costs. Thus, for a mortgage lender, the individual purchasing an energy efficient building should be a better risk than one purchasing a less efficient building.

The Commonwealth should actively seek to obtain a commitment by mortgage lenders to provide the owners of buildings with ratings of "5" or above with special dispensations such as lower downpayment requirements, or a slight discount on interest rates.

* **Direct the Secretary of Communities and Development to review the energy efficiency of all new state subsidized buildings, including any purchases of appliances, and to ensure energy efficient construction and appliances.**

There is a strong incentive to minimize first costs of new low-income housing -- but in many instances such incentives only transfer costs from today's budget to tomorrow's, at which time those costs show up in the form of low-income assistance. In addition, the Massachusetts Home Mortgage Finance Authority (MHMFA) should be directed to consider a program of incentives for builders as well.

* **The Department of Public Utilities should undertake a review of the existing gas or electric hook-up policies for residential and commercial buildings. In addition, the Executive Office of Energy Resources should examine the feasibility of developing an analogous program for oil hookups, either through the state building code or through the state building code or through some other mechanism.**

This program would be aimed at providing financial incentives in the form of lower hook-up fees for energy efficient homes and buildings, and higher fees for less efficient buildings.

*** The Secretary of Administration and Finance should be directed to accelerate the present program to improve the energy efficiency of state buildings.**

The existing process by which energy efficiency investments in state buildings are developed is cumbersome and extremely slow. At the present rate of progress, the Commonwealth will take another 60 years to complete its present array of programs to make its buildings energy efficient. This time period should be reduced by a factor of four.

*** An Energy Efficiency Corporation should be established under the direction of the Governor. Seven individuals outside government, with guidance from the Governor and EOER, should review the recommendation of the Blueprint 2000 Committee and draft legislation to create such a corporation.**

A significant way to reduce the demand for energy is to enhance energy efficiency. The Energy Subcommittee fashioned a mechanism to enlist both the public and private sectors in advancing the efficient use of all energy sources -- oil, natural gas, electricity, and gasoline. Suggestions were that the energy efficency corporation could provide financing, undertake demonstration projects, catalyze research, and develop educational programs aimed at expediting energy efficiency improvements. The major thrust behind this concept is the need to increase the continuity and permanence of the energy efficiency programs. These programs have too often been

held hostage to the whims of the federal budgetary process, and as a result managers are inhibited in developing long-range programs because there is no guarantee that their horizon stretches beyond the next budget cycle.

It is important to break the short-term perspective. An effective energy efficiency program needs, at a minimum, a ten-year horizon, since energy efficiency can only be obtained in small or moderate-size increments.

The corporation could be run by and for users, and eventually funded by users. There would be an initial sinking fund that would be set up by the state, both through direct appropriations and through the channeling of a portion of the oil overcharge monies. This fund would be contingent on the willingness of the industrial and commercial users to guarantee the payback of 25% of the annual debt obligations for the first three years, 50% for the next three, 75% for years six through nine, and 100% thereafter. The corporation could be able to generate sufficient revenue to cover at least 80% of its debt obligation. The remaining 20% would be picked up by the state or through fees that would be paid by the corporation's commercial and industrial members.

The state subsidy could be justified on the grounds that a portion of the corporation's programs would be aimed at

residential energy efficiency improvements, in homes which remain heavily reliant upon oil -- an unregulated fuel. Such a focus is important to protect citizens of the Commonwealth from future oil disruptions like those experienced in 1973-'74 and 1979-'80.

The corporation would be able to receive funds from both public and private sources, and charge fees for its services; potentially it could become revenue-neutral. Its management structure would consist of a board of 15, 12 of whom would be elected members of the corporation, with the remaining 3 to be appointed by the Governor. It is clear that establishing a corporation of this type is a major undertaking and a complex of issues including funding, structure and focus will need to be resolved in the course of drafting the legislation.

II. DEVELOP EFFICIENT, RELIABLE, AND ENVIRONMENTALLY SOUND ENERGY SUPPLIES AND SITE NEW ENERGY FACILITIES, GAS PIPELINES, AND ELECTRIC TRANSMISSION LINES.

The Commonwealth must look to other options, including significant increases in energy efficiency improvements, greater access to natural gas, renewable and solar energy, and more use of non-oil-fired electricity supplies, either generated within or purchased from outside the region. Diversity, cost, environmental impact, reliability, and timing are all factors to consider in examining these options.

A. Siting

The traditional practice of energy facilities siting is for a developer or utility to propose a particular facility at a specific site, and then passionately defend that decision. Such a practice provides strong incentives for local communities and special interests to oppose this facility until such time as sufficient concessions are made to allow opponents to justify dropping their opposition. In many instances, this point is never reached.

RECOMMENDATION TWO

A special task force should be convened to develop siting procedures for facilities of regional significance. This new procedure should emphasize compensatory schemes to induce communities to accept such facilities. The task force should be chaired by the Secretary of Administration and Finance and should include the cabinet secretaries responsible for physical environmental issues.

RECOMMENDATION THREE

A one-stop siting board should be established for projects of regional significance. Such a designation would be made at the recommendation of the Governor (requesting a vote of both branches of the legislature might be helpful as well). The responsibility of this board would be two-fold; first, to review the siting plan for each of these facilities, and second, to act as ombudsman to obtain necessary state permits.

The ombudsman role is very similar to that sometimes played by the Governor's office. This board would get the state to

share the responsibility for obtaining the permits in an expedited and effective manner for those facilities designated as being of strategic social value. If possible, permits would be awarded to the board, which would then award a single permit to the developer. The assumption is that if we can consolidate responsibility, we can expedite the process.

The compensation recommendation is based on the premise that the Home Rule tradition in Massachusetts resists the exercise of state overrides, and is aimed at providing incentives for local communities to compete to obtain facilities rather than always opposing them. We want to change the political environment from one in which these projects provide benefits to a broad cross-section of the state's population -- but focus the cost disproportionately on the host city or town -- to one which at least provides more benefits to these cities and towns.

There are several unresolved issues which the special task force should review. These include: Should the siting process distinguish between state sponsored projects and privately sponsored investments? Should there be a provision allowing the state to override local decisions? Would the designation process itself become a locus of delays rather than a means to accelerate the proceedings? And, if so, how can the process be designed to avoid this pitfall?

B. Institutional Changes

In the early 1970s, the state legislature established the Massachusetts Energy Facilities Siting Council. This Council was given two major functions. First, to review the long-run supply and demand forecasts of utilities to ensure that they would meet the Commonwealth's electricity and gas needs at the lowest cost and a minimum of environmental impact. Second, it was empowered to review the need for and the location of large electricity and gas facilities (as well as oil refineries). While there was some overlap between the Council and the Department of Public Utilities, this duplication was a minor irritant.

With the 1987 adoption by the Department of Pubic Utilities of various auction scenarios for Qualifying Facilities, and the recently promulgated notice of proposed rulemaking by the Federal Energy Regulatory Commission to establish bidding processes for Independent Power Producers and QFs, there is a distinct possibility that we are rapidly moving into an era in which electricity generation will be split apart from distribution and transmission. Under this framework, the determinant of need and price will be the marketplace. The Department of Public Utilities now approves the avoided cost calculations that serve as a target in each auction and approves the quantity of power to be purchased.

Once these approvals have been given, the auction held, and bids awarded, it is questionable whether another agency should also then review the need and economics for these facilities. Unfortunately, under existing law such a review would have to take place after the fact by the Siting Council, which could still be well within its jurisdiction in disapproving facilities which had complied with the rules and regulations of the auction.

The present role of the Executive Office of Energy Resources should also be subject to review. Established as the State Energy Office in 1974, the Executive Office has relied heavily on large infusions of federal funds, much of which may disappear by the early 1990's. The Commonwealth should assess what role this office should play in the future and how that role should integrate with those of the Siting Council, the DPU, and possibly an Energy Efficiency Corporation if it is established.

RECOMMENDATION FOUR

The Governor should institute a study to determine the most effective role for the Energy Facilities Siting Council, the Department of Public Utilities, and the Executive Office of Energy Resources in light of recent changes in the structure of energy industries, the potential sources of federal funding, and the increasing emphasis on energy efficiency and demand management programs.

To the extent that such a review results in agreement as to the broad responsibilities of each of these agencies, the Legislature should be prepared to allow the utility assessments to rise to a level adequate to meet those responsibilities. Nothing in this recommendation, however, should preclude any of these agencies from seeking federal monies for projects in their area of responsibility.

III. REDUCE OIL DEPENDENCY

Oil Dependency, Electricity Shortages, and Energy Efficient Investments

While significant strides have been made in reducing the Commonwealth's dependence on oil, the state still relies on oil products for a disproportionately larger share of its energy needs than the nation as a whole. This dependence makes Massachusetts more vulnerable to disruptions in the international oil market than most other states. In 1973-'74 and again in 1978-'79, the differential between the cost of energy in Massachusetts and that in other parts of the country grew substantially, putting our economy at a significant competitive disadvantage.

As we enter the 1990's there is a high probability that world oil markets will tighten and that the next decade will look more like the 1970's than the 1980's. The recent debate

over the oil tariff was stimulated, at least in part, by a recognition that the United States should take some action to minimize the risks of more unfavorable market conditions in the next decade.

The options for addressing these problems are several.

(1) One can raise prices through taxes, tariffs, or indirectly through quotas. There is no question that changes in oil prices result in changes in consumption. People tend to use less when prices are high and look harder for substitutes -- witness the boom in renewable technologies and alternate fuels in the 1970's. Yet for a state to unilaterally adopt a tax or tariff places it at a competitive disadvantage.

On the other hand, in 1989 there may be growing pressure to increase revenues to offset the federal budget deficit. Invariably, increased energy taxes will be offered as an option. Among the litany of energy taxes, increased gasoline levies would seem to be the most politically palatable, since the burden would be distributed more equitably across the nation and the focus would be on that sector of the economy which consumes the highest percentage of oil. Further, increased gasoline taxes would revitalize the momentum to manufacture and purchase more efficient automobiles while stimulating the development of substitute transportation fuels.

(2) A state can produce more energy resources. This is difficult for Massachusetts, since it is not blessed with a largess of natural resources.

(3) The state can provide subsidies and incentives for people to (a) use less energy; (b) purchase more energy efficient appliances, cars, homes, or machinery; or (c) purchase substitutes -- either conventional, in the form of non-oil products, or unconventional, in the form of new technologies which rely on renewable or synthetic fuels.

In addition, where a state regulatory mechanism now exists, such as building codes, those mechanisms can be used more effectively and the resulting regulations enforced more stringently.

(4) The Commonwealth can improve its direct access to fuels other than oil, such as coal and natural gas, and indirect access (through electricity) to water, coal, natural gas, and uranium.

This fourth option ties directly into a second problem -- the need for an adequate supply of electrical power.

In the 1970s, New England embraced the option of nuclear power, to meet the region's electrical power needs, to lower

its costs, and to reduce its dependence on imported oil. For example, the Seabrook facility would reduce the region's consumption of residual oil by as much as 10 million barrels per year. The Pilgrim and Yankee plants would reduce another 7.5 million barrels.

The nuclear option is now in jeopardy. Public support for it has eroded as concerns about dealing with hazardous nuclear waste and potential accidents rose, particularly in the wake of Chernobyl. There is a real possibility that the region will limit this alternative, thus increasing the urgency of develping other options.

New nuclear facilities are unlikely to be built given public anxiety about their environmental risks. It is possible, however, that concern over the greenhouse effect -- i.e., the warming of the earth's climate, partially as a result of carbon dioxide emissions from the combustion of fossil fuels -- will cause policy makers to rethink the nuclear option before the end of the century.

IV. IMPROVE GAS AND ELECTRIC TRANSMISSION CAPACITY

RECOMMENDATION FIVE

The Commonwealth should adopt as one of its major federal/state priorities a goal of increasing natural gas pipeline capacity into New England by 500 million cubic feet per day by January of 1992, and by another 300 million cubic feet per day ny January of 1995, if necessary.

Presently, the Federal Energy Regulatory Commission is completing its review of applications to expand gas transportation service to the Northeast. These applications could provide the region with increased access to the vast Canadian gas reserves located in Alberta, as well as more ability to move gas from the southwestern United States. By increasing access to gas supplies, volumes available for purchase are increased and thereby some downward pressure is put on prices. More importantly, increased access provides the ability to substitute North American natural gas for imported oil, allowing the region more fuel flexibility to weather future disruptions. In addition, improving our gas pipeline capacity would foster our long-range energy goal of fuel diversity. While the pipeline projects under review are important, it is likely still more capacity will be needed. Massachusetts should take the lead in urging FERC to establish a more streamlined process for approving future gas transportation expansion.

Improved Electric Transmission Capacity

Increased interstate electric transmission capacity would provide many of the same benefits as increased gas transmission capacity. Unfortunately, it is difficult to site new transmission lines, especially through states which do not directly benefit from the electricity being transported. To

some extent, this is an interstate siting issue which will have be solved, at least in part, by some of the same compensation schemes discussed earlier. On the other hand, it is essential that Massachusetts, New York, and Pennsylvania begin to enter into negotiations to at least identify those conditions under which New York and Pennsylvania would allow the power to move from the Midwest into New England. In addition, the heavy energy consuming states in southern New England would like increased transmission access through the northern New England states to Canada.

RECOMMENDATION SIX:

> **The Governor, through the Coalition of Northeastern Governors (CONEG), should establish a task force consisting of the energy secretaries of New York, Pennsylvania, Connecticut, and Massachusetts to identify the conditions under which an interstate electric transmission compact could be negotiated.**